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(54) STATIC DRYING RACKS FOR TUMBLER DRIERS

(71) We, THORN DOMESTIC APPLIANCES (ELECTRICAL) LIMITED, a British Company of Thorn House, Upper St. Martins Lane, London WC2H 9ED, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 The present invention relates to improvements in or relating to tumbler driers.

A tumbler drier consists of a perforated rotatable drum through which hot air is made to pass, usually along the axis of the drum. The rotating motion of the drum makes any articles placed within the drum tumble about in this stream of warm air, thereby producing a drying effect. However, in some cases the articles to be dried may be of a delicate nature, and a tumbling motion might harm the articles, for instance, woollen clothes; alternatively the articles may be cumbersome and not suited to tumbling, for example shoes. It is therefore necessary to keep such articles stationary while the warm air is allowed to pass over or through them. This has been achieved up to now by having a control setting for the tumbler drier in which the drum is stationary and yet heated air is passed through the drum. However, this system has the disadvantage that a disengaging system of gears must be provided, thereby increasing the complexity and therefore the cost of such a machine.

According to the present invention we provide a static drying rack for removable insertion within a drum of a tumbler drier, comprising a frame for holding articles to be dried, a raised support member extending from the frame and means on the supporting member for slidably engaging said support member with a bearing at the rear of such drum, the frame having one or more projections positioned so as, in

use, to rest in the front access port of the drier.

The projections preferably rest on a stationary part, e.g. a static ring which acts as a heat shield, but could alternatively rest on the front rim of the drum.

In use, the rack is placed in the drum of the drier and the articles are positioned on the frame. Since the bearing is above the rack, the weight of the articles and the rack tends to hold the rack stationary, while the drum rotates and the heated air of the rotating drum passes through and over the articles. The connection between the rack and the drum bearing is made to be of a low friction nature, thereby ensuring that the rack will remain substantially stationary while the drum is rotating. The rack will remain with the surface substantially horizontal as long as the moment due to gravity of the assembly, i.e. the rack and articles for drying, is greater than that moment tending to rotate the assembly along with the drum. Thus, the materials and configuration of the support member and the bearing are chosen such that only a small proportion of the torque of the drum will act on the support member, and this proportion will be small in comparison to the gravitational force even with the rack alone. In this way, the rack will tend to remain stationary even when no articles are placed on it.

One of a number of types of connection between the support member and the hub of the drum may be used so as to produce the conditions for slidable contact. The support member may have an annulus which fits loosely over an extension at the hub of a drum, the inner radius of the annulus being greater than the radius of the extension. Alternatively, the support member may have an extension which fits loosely into a corresponding recess within

the hub of the drum; another possible embodiment is one in which the extension on the support member has a part-spherical end which fits loosely into a socket formed 5 in the hub of the drum.

Thus, the present invention presents an economic and simple method of providing the further facility of drying delicate articles, applicable to many types of 10 tumbler drier merely by fitting an inexpensive accessory to the interior of the drier.

According to another aspect of the present invention, we provide a tumbler drier 15 comprising a rotatable drum positioned having an access port into said drum, perforations within the drum, means for circulating heated air through the drum, a central bearing at the rear of the drum, a static drying rack for removable insertion 20 within the drum through the port, said rack having a frame for holding articles to be dried, a raised support member extending from said frame, means for slidably engaging said support member with the bearing and one or more projections on the frame positioned to rest in the front access 25 port of the drier.

In one embodiment of the invention, the rack is rigidly supported by engagement 30 with the door when closed, the latter, of course, remaining stationary throughout the drying process. The projections may still abut the stationary port or the rim of the drum, but this is not so important in this 35 case; if they do, however, the contact between the surfaces must be once again of low friction. It is also possible for the closing of the door to lift the rack slightly, to 40 raise the projections out of contact with the drum.

The frame of the rack may be constructed of any material and in any form which is suitable for holding a number of 45 articles and permitting warm air to be circulated around these articles.

Especially suitable is a construction made of lengths of plastic-coated wire; the lengths arranged in a grid and the separation between adjacent lengths may be of 50 the order of 5 cms. Alternatively, the frame may comprise a plate, through which there are perforations which may have a radius of the order of 1 cm.

55 The rack may have more than one frame for holding articles, the number of frames and their relative spacing being restricted by the fact that the centre of gravity of the rack alone must be below the level of the connection of the support 60 member with the drum, unless means are provided to engage the door to prevent rotation.

In order that the invention may be more 65 readily understood, the following description

is given, merely by way of example, reference being made to the accompanying drawings, in which:—

Figure 1 is a perspective view of one embodiment of a rack according to the invention; and 70

Figure 2 is a front perspective view of the rack of Figure 1 mounted within the drum of a tumbler drier.

More specifically, Figure 1 shows a rack, 75 generally designated as 1, which comprises a rectangular frame 2 made up of a grid of lengths of plastic-coated wire 3, 4 running parallel to the outer edges of the frame 2. The support member 5 is in the form of 80 an inverted V, the two ends of the V being connected to the frame 2 along one of its sides; the plane of the support member 5 is perpendicular to the surface of the frame 2. At the apex of the support member 5, there is an annulus 6, which has an internal diameter greater than that of the hub 11 of the drum. When the rack is 85 mounted within the drier, the annulus 6 is made to fit over the hub 11. The side of the frame 2 opposite to that which is connected to the support member 5 has two arms 7 extending parallel to one another, from the frame 2, but in a direction opposite to that of the support member 5. 95 Each arm 7 has a stepped projection 8 at the end remote from the frame 2. Each arm 7 and projection 8 has a further support in the form of a bar 9 which extends from the common connection between the 100 arm 7 and the projection 8 and the side of the frame 2 which is connected to the support member 5.

Figure 2 shows the rack 1, mounted in position within the drum 10 of the tumbler 105 drier. It can be seen that the annulus 6 has been placed over the hub cap 11 of the bearing drum 10, so that while the drum 10 and the hub 11 rotate, the annulus 6 will not grip the hub 11 tightly and therefore will remain substantially stationary. 110 Furthermore, it can be seen that the projections 8 are positioned such that they sit on the rim 12 of the access port of the drum 10 thereby providing more support for the rack 1. Moreover, provision can be made for the free end of the projection 8 to engage in a recess in the door (not shown) of the tumbler drier, thereby 115 providing a rigid stationary support for the rack.

The rim 12 shown forms part of a heat shield and is stationary to assist in preventing the rack from rotating. It is contemplated that the projections could rest 125 on a portion of the drum itself, provided that they are made of low friction material.

WHAT WE CLAIM IS:—

1. A static drying rack for removable insertion within a drum of a tumbler drier, 130

- comprising a frame for holding articles to be dried, a raised support member extending from the frame and means on the supporting member for slidably engaging said support member with a bearing at the rear of such drum, the frame having one or more projections positioned so as, in use, to rest in the front access port of the drier.
2. A tumbler drier comprising a rotatable drum positioned having an access port into said drum, perforations within the drum, means for circulating heated air through the drum, a central bearing at the rear of the drum, a static drying rack for removable insertion within the drum through the port, said rack having a frame for holding articles to be dried, a raised support member extending from said frame, means for slidably engaging said support member with the bearing and one or more projections on the frame positioned to rest in the front access port of the drier.
3. A tumbler drier according to claim 2, wherein the access port has a door, the door having means for interengagement between the rack and the door when in a closed position.
4. Apparatus as claimed in claims 1, 2 or 3, wherein the rack has a plurality of parallel frames.
5. Apparatus as claimed in any of the preceding claims, wherein the support member includes an annulus engageable over the hub of the drum.
6. Apparatus as claimed in claim 5, wherein the raised support member includes an inverted V-shaped wire having at its apex a loop forming said annulus.
7. Apparatus as claimed in claim 1, 2, 3 or 4, wherein the support member has an extension for slideable engagement within a recess in the hub of the drum.
8. Apparatus as claimed in claim 7, 45 wherein the extension has a part spherical end, which is slideably engageable with a socket in the hub of the drum.
9. Apparatus as claimed in any preceding claim, wherein the frame is made of a plastics coated wire, in the form of a grid-like assembly.
10. Apparatus as claimed in any one of claims 1 to 8, wherein the frame is a plate through which there is a plurality of perforations.
11. A rack substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.
12. A tumbler drier substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.
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